

Applicant : Robert C. Sundahl  
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Filed : June 29, 2001  
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Attorney's Docket No.: 10559-438001 / P10655

9/897738

M.S. 2/25

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

- 11,46 42  
12  
105 class
1. (Currently amended): An organic light emitting diode (OLED) display, comprising:  
a back panel comprising a thermally conductive material;  
a front panel substantially parallel to the back panel;  
a heat dissipating structure attached to a surface of the back panel opposite the front panel;  
Fan  
an array of OLED pixels positioned between the front panel and the back panel; and  
a plurality of thermally conductive elements positioned between the OLED pixels and the back panel and distributed throughout the array of OLED pixels, each thermally conductive element positioned between the back panel and a conductive line in thermal contact with one of the OLED pixels, such that heat generated by each of the OLED pixels is dissipated through the conductive line in contact with the OLED pixel, the thermally conductive elements in proximity to the OLED pixel, and the back panel, and to the heat dissipating structure.
2. (Original): The display of claim 1, wherein each OLED pixel comprises a plurality of OLED sub-pixel regions that emit different colors of light.
3. (Original): The display of claim 1, wherein the thermally conductive elements comprise solder joints.
4. (Original): The display of claim 3, wherein there is at least one solder joint positioned between each OLED pixel and the back panel.
5. (Original): The display of claim 4, wherein:  
each OLED pixel has at least one cathode contact; and

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a solder joint for each OLED pixel on the cathode contact between the OLED pixel and the back panel.

6. (Original): The display of claim 5, wherein:  
each OLED pixel has at least one anode contact; and  
a solder joint for each OLED pixel on the anode contact between the anode contact and the back panel.
7. (Original): The display of claim 6, wherein at least a portion of the solder joints conducts electrical current to the OLED pixels.
8. (Original): The display of claim 1, wherein the array of OLED pixels is divided into a plurality of subsets of adjacent pixels.
9. (Original): The display of claim 8, wherein there is at least one thermally conductive element positioned between each pixel subset and the back panel.
10. (Original): The display of claim 9, wherein:  
each pixel subset includes an OLED pixel having at least one cathode contact; and  
a thermally conductive element for each pixel subset on the cathode contact between the pixel subset and the back panel.
11. (Original): The display of claim 10, wherein:  
each pixel subset includes an OLED pixel having at least one anode contact; and  
a thermally conductive element for each pixel subset between the anode contact and the back panel.
12. (Original): The display of claim 11, wherein at least a portion of the thermally conductive elements conducts electrical current to the OLED pixels.

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13. (Previously amended): The display of claim 1, wherein the thermally conductive material of the back panel is a ceramic material.

14. (Original): The display of claim 1, further comprising an epoxy material to affix the front panel to the back panel such that the epoxy material occupies the space between the thermally conductive elements.

15. (Previously amended): The display of claim 1, wherein the heat dissipating structure is a heat fin coupled to the surface of the back panel opposite to the front panel.

16. (Original): The display of claim 15, further comprising a cooling fan to force airflow over the heat fin.

17. (Previously amended): An OLED display, comprising:  
a back panel comprising a thermally conductive material;  
a front panel substantially parallel to the back panel;  
a heat dissipating structure attached to a surface of the back panel opposite the front panel;  
an array of OLED pixels positioned between the front panel and the back panel, wherein the array of OLED pixels is divided into a plurality of subsets; and  
an array of solder joints distributed throughout the array of OLED pixels such that at least one solder joint is positioned between each pixel subset and the back panel, wherein the solder joints dissipate heat from the OLED pixels and at least a portion of the solder joints conduct electrical current to the OLED pixels;  
wherein each solder joint is positioned between the back panel and either an anode line or a cathode line such that the solder joint provides thermal dissipation from the OLED pixel, to the back panel, and to the heat dissipating structure.

18. (Previously amended): The display of claim 17, wherein the thermally conductive material of the back panel is a ceramic material.

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19. (Original): The display of claim 17, wherein each OLED pixel comprises three OLED sub-pixel regions that emit different colors of light.

20. (Original): The display of claim 17, wherein the portion of the solder joints that conduct electrical current are electrically connected to at least one back panel interconnect.

21. (Previously amended): The display of claim 17, wherein the heat dissipating structure is a heat fin coupled to the surface of the back panel opposite to the front panel.

22. (Original): The display of claim 21, further comprising a cooling fan to force airflow over the heat fin.

Claims 23-29 (Cancelled)

30. (Currently amended): An OLED display, comprising:  
a back panel having at least one electrical interconnection line formed thereon;  
a front panel substantially parallel to the back panel; and  
an array of OLED pixels positioned between the front panel and the back panel, wherein each OLED pixel is operable to emit light when an electrical current is conducted through the OLED pixel between an anode line and a cathode line, *use*  
wherein each cathode line is electrically connected to ~~the~~ a corresponding electrical interconnection line of the back panel by thermally conductive elements formed at each OLED pixel and positioned between the cathode line and the corresponding electrical interconnection line.

~~31.~~ (Cancelled)

32. (Previously added): The display of claim 30, wherein each OLED pixel comprises a plurality of OLED sub-pixel regions that emit different colors of light.

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33. (Previously added): The display of claim 30, wherein the thermally conductive elements comprise solder.

34. (Previously added): The display of claim 33, wherein each OLED pixel has:  
at least one cathode contact formed between the cathode line and the electrical interconnection line of the back panel; and  
a solder joint for each OLED pixel on the cathode contact between the OLED pixel and the back panel.

35. (Previously added): An OLED display, comprising:  
a back panel having at least one electrical interconnection line;  
a front panel substantially parallel to the back panel;  
an array of OLED pixels positioned between the front panel and the back panel, the array of OLED pixels having at least one centrally located OLED pixel that is formed at a non-edge location of the array, wherein the centrally located pixel has an anode contact located at the non-edge location; and  
a thermally conductive element on the anode contact at the non-edge location to electrically connect the anode contact and the electrical interconnection line of the back panel.

*Look at!*

36. (Previously added): The display of claim 35, wherein the central pixel has a cathode contact located at the non-edge location, and a second thermally conductive element is formed on the cathode contact to electrically connect the cathode contact to the electrical connection line of the back panel.

37. (Previously added): The display of claim 35, wherein each OLED pixel comprises a plurality of OLED sub-pixel regions that emit different colors of light.

38. (Previously added): The display of claim 35, wherein the thermally conductive elements comprise solder.

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39. (New): An OLED display, comprising:  
a back panel having at least one electrical interconnection line formed thereon;  
a front panel substantially parallel to the back panel; and  
an array of OLED pixels positioned between the front panel and the back panel, wherein each OLED pixel is operable to emit light when an electrical current is conducted through the OLED pixel between an anode line and a cathode line,  
wherein each cathode line is electrically connected to a corresponding electrical interconnection line of the back panel by thermally conductive elements formed at each OLED pixel and positioned between the cathode line and the corresponding electrical interconnection line;  
wherein each anode line is electrically connected to at least one electrical interconnection line of the back panel by thermally conductive elements formed at each OLED pixel and positioned between the anode line and the electrical interconnection line of the back panel.

40. (New): The display of claim 39, wherein each OLED pixel comprises a plurality of OLED sub-pixel regions that emit different colors of light.

41. (New): The display of claim 39, wherein the thermally conductive elements comprise solder.

42. (New): The display of claim 41, wherein each OLED pixel has:  
at least one cathode contact formed between the cathode line and the electrical interconnection line of the back panel; and  
a solder joint for each OLED pixel on the cathode contact between the OLED pixel and the back panel.